

CLAIMS

What is claimed is:

1. A wireless communication system comprising:

a base station for transmitting a downlink communication and receiving a combined uplink communication from a sub base station;

the sub base station for receiving the downlink communication from the base station and transmitting the downlink communication to a plurality of user equipments; receiving uplink communications from the plurality of user equipments; combining the received uplink communications as the combined uplink communication; and transmitting the combined uplink communication to the base station;

the plurality of user equipments (UEs), each for receiving the downlink communication from the sub base station and transmitting the uplink communication to the sub base station.

2. The system of claim 1 wherein the uplink communications comprise voice data and the combining is by mixing the voice data of the uplink communications.

3. The system of claim 1 wherein the uplink communications comprise non-voice data and the combining is multiplexing the non-voice data.

4. The system of claim 1 wherein the sub base station is associated with a single telephone number and calls directed to the single telephone number rings all of the plurality of UEs.

5. The system of claim 4 wherein when a calling UE of the plurality of UEs is engaged in a call, another UE of the plurality of UEs joins the call.

6. The system of claim 5 wherein when a calling UE of the plurality of UEs is engaged in a call, the calling UE initiates a privacy mode where another UE of the plurality of UEs cannot join the call.

7. The system of claim 1 wherein each UE of the plurality of UEs is associated with a unique telephone number and the sub base station directs calls to one of the unique telephone numbers to the UE associated with that one unique telephone number.

8. The system of claim 1 wherein the sub base station is associated with a plurality of telephone numbers and calls directed to any of the plurality of telephone numbers rings all of the plurality of UEs.

9. The system of claim 8 wherein when one of the plurality of UEs is engaged in a call associated with one of the plurality of telephone numbers, another of the UEs can engage in a call using another of the plurality of telephone numbers.

10. A sub base station for use in wireless communication system, the sub base station wirelessly relaying communications between a base station and a plurality of user equipments (UEs), the sub base station comprising:

a base modulation/demodulation device for communicating with the base station;

a UE modulation/demodulation device for communicating with the plurality of user equipments; and

a sub base station controller for combining communications from the plurality of UEs and sending the combine communications to the base modulation/demodulation device for transmission to the base station.

11. The sub base station of claim 10 wherein the communications from the plurality of UEs comprise voice data and the combining is performed by a voice mixer.

12. The sub base station of claim 10 wherein the communications from the plurality of UEs comprise non-voice data and the combining is performed by a multiplexer.

13. The sub base station of claim 10 wherein the sub base station is associated with a single telephone number and calls directed to the single telephone number are relayed by the sub base station so that all of the plurality of UEs ring.

14. The sub base station of claim 10 wherein each UE of the plurality of UEs is associated with a unique telephone number and the sub base station controller directs calls to one of the unique telephone numbers to a modulation device associated with the UE of that one unique telephone number.

15. The sub base station of claim 10 wherein the sub base station is associated with a plurality of telephone numbers and the sub base station controller directs calls to any of the plurality of telephone numbers to a plurality of modulation devices associated with all the UEs.

16. The sub base station of claim 15 wherein when one of the plurality of UEs is engaged in a call associated with one of the plurality of telephone numbers, the sub base controller allows another UE of the plurality of UEs to join the call.

17. A wireless dual use user equipment (UE) capable of operating in a cordless and cellular environment, the dual user user equipment comprising:

a modulation and demodulation device for modulating/demodulating data using a plurality of modulation/demodulation schemes, the plurality of modulation/demodulation schemes comprise a cordless for communicating with a sub base and a cellular scheme for communicating with a base station;

a modulation and demodulation controller for switching the modulation/demodulation scheme of the modulation/demodulation device between the cordless scheme and the cellular scheme; the modulation and demodulation controller initiating operation in the cellular environment by sending a handoff signal and switching to the cellular scheme; whereby a sub base in response to the sent handoff signal ceasing communications with a cellular base station.

18. The dual use UE of claim 14 wherein upon initiating operation in the cellular environment, the dual use UE receiving a cellular modulation/demodulation scheme used by the sub base and switch to the received cellular modulation/demodulation scheme.

19. The dual use UE of claim 14 wherein the initiation of operation in the cellular environment is initiated when the dual use UE is leaving an operating range of the sub base.

20. The dual use UE of claim 14 wherein an initiation of operation in the cordless environment is initiated when the dual use UE is entering an operating range of the sub base.

21. The dual use UE of claim 17 wherein the dual use UE determines it is leaving the cordless environment by measuring a received signal strength of a sub base transmission.